

REMARKS

Claims 1 and 3-40 are pending in the above-identified application. Claims 12-38 are withdrawn from consideration. Claims 3, 4, 8, 9, 39 and 40 are allowed. It is respectfully submitted that this response is fully responsive to the Office Action dated April 20, 2005.

In the final Office Action mailed on December 2, 2004, claim 2 was indicated as being allowable over the prior art of record. Likewise, claim 5, which depended from claim 2, was also indicated as being allowable because it depended from claim 2. Accordingly, on April 4, 2005, Applicants cancelled claim 2, amended claim 1 to include the limitations of claim 2, and amended claim 5 to depend from claim 1. However, in the Office Action dated April 20, 2005, the Examiner withdrew the indicated allowability of claims 2 and 5 in view of *Yang et al.* (U.S. 6,479,402 B1)¹ and rejected claims 1 and 5.

Claim 1 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Dobuzinsky et al.* (U.S. 5,330,935) in view of *Weimer* (U.S. 2003/0040171 A1) and *Chua et al.* (U.S. 2004/0038486 A1).

In rejecting claim 1, the Examiner acknowledged that *Dobuzinsky* failed to disclose forming the silicon nitride layer by forming a silicon film on the lower silicon oxide film, and completely nitriding the silicon film with a surface wave plasma generated by a plasma nitriding method. Similar to the previous Office Action, the Examiner asserted that *Weimer* teaches plasma nitriding the silicon film using an ICP system, an ECR system, or other plasma nitriding systems. The Examiner acknowledged that *Weimer* failed to disclose that the nitriding is done

¹ We presume that the Examiner intended to cite *Dobuzinsky et al.* (U.S. 5,330,935) rather than *Yang et al.* (U.S. 6,479,402 B1) because *Yang et al.* is not cited anywhere else in the Office Action and is not cited on the attached PTO-892.

with a surface wave-plasma generated by a plasma nitriding method. However, the Examiner asserted that *Chua* discloses a method of forming a nitride layer using a plasma nitriding method (par. 0061) and that the plasma nitriding method is selected from one of an ICP system, a radial line slot antenna system, an ECR system, etc. (par. 0061).

In view of these three references, the Examiner asserted that it would have been obvious to modify *Dobuzinsky* by forming the silicon nitride layer using the method of *Weimer*, because the resulting silicon nitride is thinner than a silicon nitride layer formed by conventional deposition methods (*Weimer* – par. 5, lines 7-14). Applicants respectfully disagree for at least the following reasons.

Although the *Dobuzinsky* reference was aware of a “low temperature plasma oxidation process”, the reference, with regard to the silicon nitride layer, teaches away from “*completely [nitriding] the silicon film with a surface wave plasma generated by a plasma nitriding method*” [claim 1.] Specifically, the reference teaches that “after the thin oxide layer 39 is formed additional CVD depositions of silicon nitride 40...As illustrated in FIG. 5B a thin silicon nitride layer 40 is deposited by CVD processing.” [col. 6, lines 51-64.]

As disclosed on page 16 of the above-identified application, the CVD method requires high processing temperatures [p. 16]; whereas, the plasma nitriding method requires much lower processing temperatures (i.e., 200C – 600C) and results in a high-quality and dense plasma nitride film [page 17.] The low temperature treatment of the claimed method prevents hydrogen in the silicon nitride film from desorbing and diffusing to the lower silicon oxide film [p. 21.] Although *Dobuzinsky* appears to recognize that the “ability to reduce processing temperatures in

the creation of oxides is important” [col. 3, lines 50-52], *Dobuzinsky* does not recognize this advantage of the plasma nitriding method. In view of this, this rejection is based on hindsight reasoning. One skilled in the art would not be motivated to combine the three references cited by the Examiner to result in the claimed invention.

Also, one skilled in the art would not be motivated to combine the teachings of the cited documents, in part because *Weimer* is an ON structure and *Dobuzinsky* is an ONO structure. Accordingly, Applicants respectfully request that the rejection of claim 1 be withdrawn.

Claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Dobuzinsky* in view of *Weimer* and *Chua* as applied to claim 1 above, and further in view of *Maita et al.* However, claim 5 depends from independent claim 1, and is likewise allowable in view of the above remarks.

Applicants appreciate the Examiner’s acknowledgement that claims 6, 7, 10, and 11 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, in view of the above remarks, Applicants respectfully submit that these claims are in condition for allowance.

In view of the aforementioned remarks, Applicants submit that that all pending claims are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants’ undersigned attorney to arrange for an interview to expedite the disposition of this case.

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Response under 37 C.F.R. §1.111
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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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